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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/528,766	03/17/2000	Martin L. Radue	OMCO:0056	5306

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EXAMINER	
SOLAK, TIMOTHY P	

ART UNIT	PAPER NUMBER
3746	

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/528,766	RADUE, MARTIN L.
	Examiner	Art Unit
	Timothy P. Solak	3746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *25-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *25-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 March 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 33-34 are objected to because of the following informalities:

* Recitation of "movement of the pump member actuating the inlet check valve" (Claim 33, lines 2-3) is not clear in context. The check valve disclosed in Figure 2 is actuated by a pressure difference between two sides of the pump chamber. As recited, the relationship between the pumping member and the check valve it is unclear. Is the pumping member in physical contact with the check valve? Applicants may wish to consider using terminology, such as -- movement of the pump member changing the volume of the pump chamber actuates the inlet check valve--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 25-30, 33 and 35-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Gladden (3,781,140). Gladden teaches a reciprocating fluid pump assembly comprising: a housing assembly 39/49/17/58 including a drive section 39/49 (the outer diameter portion) and an adjacent pump section 17/58 (the inner core portion); a drive assembly 39, disposed in the

drive section, including a permanent magnet 49 surrounded by a coil assembly 45. One of the coil assembly and permanent magnet, being capable of reciprocal movement between a first position (as seen in Figure 1) and a second position upon application of a signal to the windings (column 25, lines 58-65); the one forming a movable member 41. Gladden further discloses a resilient member 87 (column 6, lines 60-65) biasing the movable member in the first position and a pump assembly 13/20 disposed in the pump section including a pump member 13 capable of reciprocal movement and operatively (column 4, lines 15-25) connected to the movable member. Gladden further discloses the movable member includes the coil assembly and a plunger 33 operatively connected to the coil assembly and the resilient member to be a spring 87 disposed between the plunger and pump assembly. Gladden further discloses a fluid inlet passageway 14, an inlet check valve 20, a nozzle 80/61/60 and a nozzle poppet valve 78 (see Figure 2).

Claims 38-40, 42, 46 and 47 are rejected under 35 U.S.C. 102(b) as being anticipated by Bottoms (4,345,565). Bottoms teaches a fuel injection system for an internal combustion engine having at least one combustion chamber 19 comprising: a fuel reservoir 58, at least one reciprocating fuel pump 50 comprising: a housing assembly 11/14/16 including a drive section 16 and an adjacent pump section 14/11, a drive assembly disposed in the drive section including a permanent magnet (column 2, lines 40-41) and a coil 28 having windings 30. One of the coil assembly and permanent magnet being capable of reciprocal movement between a first position (as seen in Figure 1) and a second position upon application of a signal to the windings (column 2, lines 36-40), the one forming a movable member 29/33. Bottoms further discloses a resilient member 35 biasing the movable member in the first direction and a pump assembly 24/22/26,

disposed in the pump section, including a pump member 24 operatively connected (through spring 35) to the movable member. Bottoms further discloses a first fuel pump 55 for drawing fuel from the fuel reservoir, a separator 54 for receiving fuel from the first fuel pump and a second fuel pump 51 for drawing fuel from the separator and the at least on reciprocating fuel pump assembly receiving fuel from the second fuel pump (see Figure 2). Bottoms further discloses an inlet manifold 56, receiving fuel from the second fuel pump and the at least one reciprocating fuel pump assembly drawing fuel from the inlet manifold; and a return manifold for returning excess fuel from the at least one reciprocating fuel pump assembly to the separator (column 4, lines 25-30, see Figure 2). Bottoms further teaches an injection controller (column 2, lines 33-34) and a nozzle 37 in fluid communication with the pump assembly.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gladden (previously mentioned), in view of Karsten et al. (5,334,910). Although Gladden teaches most of the limitations of the claims, including a reciprocating pump having a permanent magnet, he does not disclose a two-piece magnet having a core. Karsten et al., disclosing interlocking permanent magnets, specifically teach a two-piece permanent magnet 52 (see Figure 5, column 3, lines 25-28) having a core 18/12 conductive to magnet flux (column 4, lines 32-45). Karsten

et al. teach the magnets stacked between the conductive core advantageously facilitated assembly (column 2, lines 54-59) and prevented radial movement of the magnets (column 4, lines 45-50). Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have used two permanent magnets stacked between a conductive core as taught by Karsten et al., in the pump disclosed by Gladden, to have advantageously facilitated assembly and/or prevented radial movement of the magnets.

Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gladden (previously mentioned), in view of Mardell (4,116,591). Although Gladden teaches most of the limitations of the claim, including a reciprocating electromagnetic pump having an inlet and a check valve, he does not disclose a passageway from the inlet into the interior of the drive unit. Mardell, disclosing a reciprocating pump, specifically teaches a passageway 35 from an inlet to the interior of the drive housing (column3, lines15-20). It was old and well known in the art of pump fabrication that wetting a drive coil with a pump fluid advantageously cooled the assembly. Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have used the passageway taught by Mardell, in the pump disclosed by Gladden, to have advantageously cooled the assembly.

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gladden (previously mentioned). Although Gladden teaches most of the limitations of the claim, including a reciprocating fluid pump, he does not disclose pumping fuel and oil. With respect to the intended use of the apparatus, namely pumping fuel and oil, the prior art teaches all of the

structural limitations set forth in the claim and is therefore capable of performing all the possible uses of such a structure. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have pumped fuel and oil, in the pump disclosed by Gladden, to have advantageously increased the utility of the unit.

Claims 41 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bottoms (previously mentioned), in view of Coldren et al. (5,961,045). Although Bottoms teaches most of the limitations of the claims, including a reciprocating fuel pump, he does not disclose a plurality of units. Coldren et al., disclosing a reciprocating fuel pump, specifically teach a plurality of units (column 2, lines 49-60). It was old and well known in the art of pump fabrication that a plurality of fuel injectors advantageously allowed for proper timing. Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have used the plurality of units taught by Coldren et al., in the pump disclosed by Bottoms, to have advantageously allowed for proper timing.

Claims 43-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bottoms, in view of Gladden (both previously mentioned). Although Bottoms teaches most of the limitations of the claims, including reciprocating fuel pump having a permanent magnet and coil assembly, he does not disclose the coil surrounding the magnet and being the movable member. Gladden, disclosing a reciprocating pump, specifically teaches a moving coil assembly 45 surrounding a permanent magnet 49. Coldren et al. teach the moving coil surrounding the permanent magnet design advantageously synchronized the unit (column 2, lines 28-41). Therefore, it would have

been obvious to one of ordinary skill in the art, at the time the invention was made, to have used a moving coil surrounding a permanent magnet as taught by Gladden, in the pump disclosed by Bottoms, to have advantageously synchronized the unit.

Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bottoms, in view of Karsten et al. (both previously mentioned). Although Bottoms teaches most of the limitations of the claim, including a reciprocating pump having a permanent magnet, he does not disclose a two-piece magnet. Karsten et al., disclosing interlocking permanent magnets, specifically teach a two-piece permanent magnet 50/52. Karsten et al. teach the two-piece magnet advantageously facilitated assembly (column 2, lines 54-59). Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have used two-piece permanent magnet taught by Karsten et al., in the pump disclosed by Bottoms, to have advantageously facilitated assembly.

Conclusion

All the previously cited, prior art made of record and not relied upon, is considered pertinent to applicant's disclosure. Applicants should review all the previously cited art in response to this action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy P. Solak whose telephone number is 703-308-6197. The examiner can normally be reached on Monday through Friday from 10am to 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on 703-306-2772. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Art Unit 3746 will be relocating on November 22, 2004. After the 22nd the Examiner can be reached at 517 272-4833 and the supervisor at 517 272-4834.

Timothy P. Solak
Examiner
Art Unit 3746
October 29, 2004